Calcium, vitamin D, milk consumption, and hip fractures: a prospective study among postmenopausal women.

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Abstract

BACKGROUND: Short trials of calcium supplementation show that it reduces loss of bone density in postmenopausal women; longer observational studies do not generally find a lower risk of hip fracture with higher-calcium diets. Fewer studies have focused on vitamin D in preventing postmenopausal osteoporosis or fractures.

OBJECTIVE: We assessed relations between postmenopausal hip fracture risk and calcium, vitamin D, and milk consumption.

DESIGN: In an 18-y prospective analysis in 72 337 postmenopausal women, dietary intake and nutritional supplement use were assessed at baseline in 1980 and updated several times during follow-up. We identified 603 incident hip fractures resulting from low or moderate trauma. Relative risks (RRs) from proportional hazards models were controlled for other dietary and nondietary factors.

RESULTS: Women consuming \( \geq 12.5 \) microg vitamin D/d from food plus supplements had a 37% lower risk of hip fracture (RR = 0.63; 95% CI: 0.42, 0.94) than did women consuming < 3.5 microg/d. Total calcium intake was not associated with hip fracture risk (RR = 0.96; 95% CI: 0.68, 1.34 for \( \geq 1200 \) compared with < 600 mg/d). Milk consumption was also not associated with a lower risk of hip fracture (P for trend = 0.21).

CONCLUSIONS: An adequate vitamin D intake is associated with a lower risk of osteoporotic hip fractures in postmenopausal women. Neither milk nor a high-calcium diet appears to reduce risk. Because women commonly consume less than the recommended intake of vitamin D, supplement use or dark fish consumption may be prudent.